Business Case Analysis
for
Coated Cooking Pans

Prepared for:
The Under Secretary of the Navy

Prepared by:
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1. Executive Summary

1.1 Description: The use of commercial non-stick coating on Navy roasting and sheet pans will enhance the Quality of Life and reduce workload for food service personnel by reducing the man-hours required for cleaning by 75 to 85 percent.[1] Approximately 45 man-years of workload will be saved annually.[2] The coating to be applied to these pans is similar to Teflon or Silverstone and decreases food build-up during cooking. Industry studies by Dupont have identified savings of 75 percent in cleaning time.[3] Navy studies by Natick Laboratories, USS MIAMI (SSBN-741), and USS HARTFORD (SSN-768) indicate man-hour savings of 75 to 85 percent per pan. Approximately 10,000 pans are used daily by Navy food service operations.[4] Studies have demonstrated average cleaning time savings of 2.5 minutes per pan.[5] Life expectancy of the pans is estimated at 24 months.[6] The use of coated pans supports Chief of Naval Operations' efforts to reduce workload afloat, especially during the Inter-Deployment Training Cycle. The return on investment for this proposal is provided in the table below.

1.2 Summary Table 5-Year ROI (Costs/Savings/ROI Per Annum):[7]

	FY 00	FY 01	FY 02	FY 03	FY 04	Total ($M)
Total Annual Cost (Coating)	.59	0	.60	0	.63	1.82
Total Annual (Workload) Savings	.60	1.20	1.22	1.24	1.26	5.52
Return on Investment	**.01**	**1.20**	**.62**	**1.24**	**.63**	**3.70**

Return on Investment in manpower savings should be realized only after this initiative is proven on deployment and the corresponding workload reduction is validated by NAVMAC and tied to specific billets.

1.3 Benefits: Studies have demonstrated the advantages of utilizing coated cooking pans to include reduced cleaning time and reduced cooking time. Afloat units are currently manned at 88 percent of allowance for General Detail (GENDET) sailors, E1-E3.[8] Junior Sailors are often serving as Food Service Attendants more than 90 days per tour. Reduced workload through use of coated cooking pans will decrease "drudge" work and make more time available for Food Service Attendants to accomplish other work and pursue professional/personal growth that is not being accomplished due to current manning shortages.

2. Background

2.1 Objectives/Scope – Detailed Description: Recent improvements in food service technology in the commercial sector have provided an opportunity for Navy to utilize these improvements in afloat food service operations. Specifically, improvements by Industry have resulted in the development of a resilient, protective coating that can be applied to Navy roasting and sheet pans. This coating significantly reduces the amount of time required to clean pans. Several prototypes have

been conducted within the fleet to identify the advantages, disadvantages and feasibility of utilizing coated pans in the Navy.

- Initial, limited testing by Natick Laboratories identified a 75 percent savings in cleaning time and no savings in cooking time.[9]

- A study onboard the USS MIAMI (SSBN-741) resulted in labor savings of 74 percent (approximately 2.3 minutes per pan) due to decreased cleaning time. In addition, the ship observed an average cooking time reduction of 8 percent (2 minutes per pan) due to the coated cooking surface.[10]

- A study onboard the USS HARTFORD (SSN-768) resulted in labor savings of 85 percent (approximately 2.67 minutes per pan) due to decreased cleaning time. Average cooking time decreased 3 percent (1.5 minutes per pan) due to the coated cooking surface.[11]

2.2 Implementation Components: There are approximately 13,500 sheet pans and 3,800 roasting pans on 294 ships and submarines, a total of over 17,000 pans.[12] Coating of pans should be funded only for those pans that are used on a daily basis, approximately 10,000 pans. Coating of 110 percent of the daily requirement will provide significant workload reduction on a daily basis. Contractors have estimated that the coating and delivery of about 10,000 pans could be accomplished in 6-9 months at a cost of less than $600K.[13] The life expectancy of these pans, given normal shipboard usage, is estimated at 24 months.

3. Benefits

3.1 Summary List: Potential benefits will include:

- Reduced workload
- Reduced cooking time
- Improved Quality of Life

3.2 Individual Benefit Description

3.2.1 Reduced Workload: Commercially coated roasting and sheet pans have a surface that prevents foods from sticking, thereby reducing the clean up time. Navy studies have demonstrated an average time savings of 79 percent to clean roasting and sheet pans.[14]

3.2.2 Reduced Cooking Time: Studies onboard USS MIAMI (SSBN-741) and USS HARTFORD (SSN-768) documented a slight reduction in cooking time (average 6 percent) for some products.[15] Though this does not directly reduce workload, reduced cooking time does provide a benefit to food service personnel by reducing the amount of time it takes to prepare a product.

3.2.3 Improved Quality of Life: Quality of Life for some Food Service Attendants will improve due to reduced workload. Increased time will be available to accomplish other work and pursue professional/personal growth opportunities.

4. Associated Cost Savings

The savings associated with use of coated cooking pans consist of tangible and intangible savings. Tangible savings can be quantified accurately. Intangible savings are considered as those either impossible to quantify or beyond the scope of this analysis.

4.1 Tangible Savings

4.1.1 Workload Reduction ($1.2M annual savings):[16] The workload reduction (average 79 percent) reported by USS MIAMI (SSBN-741) and USS HARTFORD (SSN-768) is consistent with the savings predicted by the supplier of coated pans. Estimated total hours to be saved annually equates to 45 man-years. For purposes of this proposal, personnel impacted were assumed to be at the E-2 paygrade with an FY 00 composite standard pay rate of $26,250, annually.[17] The workload reduction provides an opportunity to reduce Food Service Attendant "drudge" work.

4.2 Intangible Savings

4.2.1 Quality of Life Impact: Reduced Food Service Attendant workload will improve their Quality of Life. Additionally, since food service is arguably the #1 morale driver afloat, any improvements in the working conditions of food service personnel will improve the overall food service operation and resultant morale of the ship.

5. Cost to Implement

5.1 Proof of Concept Costs (Prototypes): There are no proof of concept costs. Prototypes have already been funded and conducted.

5.2 Deployed Systems Costs (Fleet-Wide Implementation): The estimated cost for deployment of coated roasting and sheet pans over a five-year period is as follows:

FY 00	$590K
FY 01	$ 0K
FY 02	$600K
FY 03	$ 0K
FY 04	$630K

This estimate is based upon cost to replace total Navy requirement for pans (determined by daily usage data plus 10 percent).[18] Initial price quotes from industry are $95/roasting pan (Quantity: 2400) and $40/sheet pan (Quantity: 9029).[19] Life expectancy for the coated pans is 24 months.

6. Conclusions

6.1 Short Summary of Benefits: Based on the methodology applied in this analysis, Navy will obtain a significant amount of savings through use of coated cooking pans. Improved Quality of Life and reduced workload will constitute the primary benefits.

6.2 Assumed Cumulative Implementation Plan:

FY 00 and beyond	100 percent (of Pans Used Daily)

6.3 Total Cost Savings over 5-Year Period: Using the estimated implementation cost and potential savings, an estimated total savings of $3.7M is forecast for a five-year period. An improvement in the overall Quality of Life for Food Service Attendants will also occur.

An estimated total savings of $3.7M is forecast for a five-year period.

Attachment 1: Study Comparison – USS HARTFORD (SSBN 741) and USS MIAMI (SSN 768)

Attachment 2: Natick Laboratories Study Results – Cleaning Coated Pans

Attachment 3: Roasting and Sheet Pans Data

Attachment 4: Premier Marketing Letter to Natick dated 15 Dec 1999

Attachment 5: PERS-221A EMC Statistical Summary Sheet (dated 10/12/99)

Attachment 6: Military Composite Standard Pay and Reimbursement Rates

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[1] Based on Attachment 1 (Study Comparison - USS HARTFORD (SSBN 741) and USS MIAMI (SSN 768)) and Attachment 2 (Natick Laboratories Study Results).

[2] Provided as Attachment 3 (Roasting and Sheet Pans Data), Time Saved/Man-years (Cell U15).

[3] Provided as Attachment 4, the Premier Marketing Letter to Natick dated 15 Dec 1999.

[4] Provided as Attachment 3 (Roasting and Sheet Pans Data), Cells J15 plus L15 (Total Sheet/Strap Pans Used per Day).

[5] See Attachment 1 (Study Comparison - USS HARTFORD (SSBN-741) and USS MIAMI (SSN-768)), Cell J6 (Avg Minutes Saved – Cleaning).

[6] Provided as Attachment 4, the Premier Marketing Letter to Natick dated 15 Dec 1999.

[7] See Attachment 3 (Roasting and Sheet Pans Data) (ROI), Total Savings minus Total Costs per annum.

[8] Based on PERS-221A EMC Statistical Summary Sheet (dated 10/12/99). Provided as Attachment 5.

[9] See Attachment 1 (Study Comparison - USS HARTFORD (SSBN 741) and USS MIAMI (SSN 768)).

[10] See Attachment 1 (Study Comparison - USS HARTFORD (SSBN 741) and USS MIAMI (SSN 768)), MIAMI Data.

[11] See Attachment 1 (Study Comparison - USS HARTFORD (SSBN-741) and USS MIAMI (SSN-768)), HARTFORD Data.

[12] See Attachment 3 (Roasting and Sheet Pans Data), Cells B34-D34.

[13] See Attachment 3 (Roasting and Sheet Pans Data), Cell O15 (Total Navy Cost to Replace), and Attachment 4, the Premier Marketing Letter to Natick dated 15 Dec 1999.

[14] See Attachment 1 (Study Comparison - USS HARTFORD (SSBN-741) and USS MIAMI (SSN-768)), Cell L6 (Decrease Clean Time).

[15] See Attachment 1 (Study Comparison - USS HARTFORD (SSBN-741) and USS MIAMI (SSN-768)), Cell E6 (Decrease Cook Time).

[16] See Attachment 3 (Roasting and Sheet Pans Data), Cell V15 (Total Cost Savings).

[17] Provided as Attachment 6, Military Composite Standard Pay and Reimbursement Rates, Department of the Navy, for Fiscal Year 2000.

[18] See Attachment 3 (Roasting and Sheet Pans Data), Cell O15 (Total Navy Cost to Replace).

[19] See Attachment 3 (Roasting and Sheet Pans Data), Cells F18-19 (Total Number of Sheet Pans to Replace and Total Number of Strap Pans to Replace), and Attachment 4, the Premier Marketing Letter to Natick dated 15 Dec 1999.